

REMARKS

Claims 13-31 were previously pending in the application. By the Amendment, Claims 22, 24 and 25 are currently amended. A new independent Claim 32 and a new Claim 33 depending from the new independent Claim 32 have been added. Claims 13 – 33 are currently pending in the present application.

The claims are under objection because of a typographical error in Claim 22 and an antecedent basis problem with Claim 24. Claim 22 has been amended to resolve the typographical error. Claim 24 has been amended to cure the antecedent basis problem.

Substantively, the claims stand rejected under the cited prior art of record. Specifically, Claims 13, 14 and 19 were rejected under 35 USC §102(b) as being anticipated by Suzuki et al US Patent No. 4161557 (Suzuki '557). Claims 13, 14, 19-22, 25 27 and 28 were rejected under 35 USC §102(b) as being anticipated by Plimpton US Patent No. 4738549 (Plimpton '549).

Claims 15-17 were rejected under 35 USC §103(a) as being unpatentable over Suzuki '557. Claims 16, 18 and 26 were rejected under 35 USC §103(a) as being unpatentable over Plimpton '549.

Claims 23, 24, 29 and 30 were rejected under 35 USC §103(a) as being unpatentable over Plimpton '549 in view of MacWilliams US Patent No. 6385869 (MacWilliams '869).

Claim 31 was rejected under 35 USC §103(a) as being unpatentable over Plimpton '549 in view of Marques et al WO 01/46661 (Marques '661.).

Applicants respectfully traverse the above rejections and submit to the contrary that the present claimed invention is neither anticipated nor rendered obvious by any of the cited references, taken singly or in any combination.

Independent Claim 13 defines the present invention as a temperature indicating element for a refrigeration device including a backing and a thermochromic layer applied to the backing for indicating a predetermined desired temperature. The thermochromic layer is enclosed between a backing and a transparent protective layer.

As defined in Independent Claim 25, a refrigeration device includes a temperature-indicating element having a backing and a thermochromic layer applied to the backing. The thermochromic layer includes thermochromic pigment elements that change color at about +4 degrees centigrade (+4° C) for visually indicating a predetermined-desired temperature with the thermochromic layer enclosed between the backing and a transparent protective layer forming a casting compound.

In substantial contrast to the temperature indicating element recited in Claim 13 of the present application and the refrigeration device recited in Claim 25 of the present application, the Suzuki '557 reference discloses a complex structure for polyvinyl butyral-liquid crystal film forming compositions and films that change color according to the temperatures encountered. There, 2, 3 or 4 component liquid crystal compositions are employed for providing a desired color response, a meso-phase or color-play temperature range at a desired temperature level and having a suitable width of temperature range and/or desired glass transition temperature. Preferably, the liquid crystals are selected to provide a color response in the meso phase range changing with increasing temperature from red through orange, yellow, green and blue to violet in the visible spectrum as the results of the light reflections are scattering by the liquid

crystals (see Col. 4, lines 2-9, of Suzuki '557). In contrast to the present invention, Suzuki '557 uses a liquid crystals and neither teaches nor discloses the desirability of using thermochromic pigments as recited in independent claims 13, 25, and 32 of the present application. Moreover, Suzuki '557 does not provide an indication that a particular temperature level has been achieved but rather provides an arrangement in which different ranges are provided for indication of a temperature in a particular range.

The Office Action asserts that the Suzuki '557 patent discloses a temperature-indicating element for a refrigeration device. As seen in the Suzuki '557 reference, compositions number 14 through 16 [from a table of compositions useful in the Suzuki '557 patent], are useful, *inter alia*, for leak detection in refrigeration. Such leak detection does not provide the temperature indication inside the refrigeration device as provided by the present invention and, accordingly, reference to the Suzuki '557 patent is misplaced. Therefore, Suzuki '557 does not anticipate the present invention and, since Suzuki '557 does not disclose or suggest the present invention, the Suzuki '557 reference cannot be asserted to render the present invention obvious.

Plimpton '549 discloses a thermometer for immersion in a swimming pool. In an arrangement similar to that of Suzuki '557, Plimpton '549 discloses the use of liquid crystals to provide a temperature indication with a certain range, unlike the arrangement of the present invention that utilizes thermochromic pigments specifically chosen for the ability to change color at +4° C. In substantial contrast, Plimpton '549 chooses unknown liquid crystal agents that are operable from about 15° F to about 160° F (see Col. 2, lines 18-20, of Plimpton '549). Once again, like the device of Suzuki '557, the Plimpton '549 device teaches a liquid crystal display that indicates temperature over a desired range (see Column 3, line 7-10, of Plimpton '549). Accordingly, the Plimpton '549 device does not provide an indication that a specific temperature has been achieved or

is lower by using a visual perceptible symbol that is present when the temperature is +4° C and absent when the temperature is lower than +4° C.

Accordingly, the Plimpton '549 device cannot be said to anticipate or render the present invention obvious either alone or in any combination with any of the cited references.

For these and other reasons, Suzuki '557 does not disclose the subject matter defined by independent Claim 13. Therefore, Claim 13 is allowable. Claims 14-21 depend from Claim 13 and are allowable for the same reasons and also because they recite additional patentable subject matter.

In addition, for the foregoing and other reasons, Plimpton '549 does not disclose the subject matter defined by independent Claim 25. Therefore, Claim 25 is allowable. Claims 26-31 depend from Claim 25 and are allowable for the same reasons and also because they recite additional patentable subject matter.

New Independent Claim 32 defines a temperature indicating element for refrigeration device including a backing and a thermochromic layer applied to the backing. The thermochromic layer is enclosed between the backing and a transparent protective layer. The thermochromic layer has a pigment of a given color and changes to a pigment of a different color when the refrigeration device passes below a predetermined desired temperature. The temperature indicating element recited in Claim 32 also includes an indicator display including a contrast indication element for indicating that the refrigeration device has passed below the predetermined desired temperature. The contrast indication element is disposed relative to the thermochromic layer such that the contrast indication element visually contrasts with the pigment of the different color and the extent of the visual contrast of the contrast indication element with the pigment of the different color is such that this visual contrast with the pigment of the different

color is greater than a visual contrast of the contrast indication element with the pigment of the given color, whereby a user can perceive via the visual contrast of the contrast indication element with the pigment of the different color that the temperature of the refrigeration device has passed below the predetermined desired temperature. None of the prior art of record, including Suzuki '557 and Plimpton '549, disclose a temperature indicating element as recited in Claim 32. More specifically, the prior art does not disclose, among other things, a contrast indication element that visually contrasts with a pigment of the different color such that this visual contrast with the pigment of the different color is greater than a visual contrast of the contrast indication element with a pigment of a given color, whereby a user can perceive via the visual contrast of the contrast indication element with the pigment of the different color that the temperature of the refrigeration device has passed below the predetermined desired temperature.

Therefore, Applicants respectfully request allowance of independent Claim 13, 25 and 32. Claims 14-24 depend from Claim 31 and Claims 26-31 depend from Claim 25, all of which and should be allowed for the same reasons and also because they recite additional patentable subject matter.

CONCLUSION

In view of the above, entry of the present Amendment and allowance of Claims 13-33 are respectfully requested. If the Examiner has any questions regarding this amendment, the Examiner is requested to contact the undersigned. If an extension of time for this paper is required, petition for extension is herewith made.

Respectfully submitted,



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April 23, 2007

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